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ABSTRACT

A study was conducted at Piedmont Virginia Community College (PVCC) to analyze the college's assessment of students' reading and writing skills, investigate the relationship between assessment scores and grades in specific content courses, establish the relationship between developmental course completion and content course grades, and measure skill improvement. Since January 1984, 1,960 PVCC students were assessed using the Northern Virginia English Qualifying Exam for writing and the Nelson-Denny Reading Test. An examination of their test results and course grades revealed the following: (1) 879 students scored below college-level on the English Qualifying Exam, but only 297 scored below a 10th grade reading level, which placed approximately 15% of the students in developmental reading and 45% in developmental writing; (2) a slight negative relationship was discovered between students' assessment scores and their grades in psychology, history, accounting, or economics; (3) within a sample of 25 students scoring below the cutoff on the writing exam and below the 10th grade reading level, successful completion of developmental courses was related to higher grades and persistence rates; and (4) students who completed the developmental writing course evidenced skill improvements on the English Qualifying Exam post-test. (EJV)

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DEVELOPMENTAL READING AND WRITING AT PIEDMONT VIRGINIA COMMUNITY COLLEGE

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Brief No. 88-7

PVCC Institutional Research Brief

July 1988

DEVELOPMENTAL READING AND WRITING AT PIEDMONT VIRGINIA COMMUNITY COLLEGE

In January 1984, PVCC began recording the assessment scores of students being tested in reading and writing. Since that time, 1,960 students have been assessed using the Northern Virginia English Qualifying Exam (Form A) for writing and the Nelson-Denny Reading Test (Form E) for reading. This and other data pertaining to developmental reading and writing at Piedmont Virginia Community College (PVCC) were analyzed by Bettye Walsh, Assistant Professor of English and Developmental Studies at PVCC, and Ronald Head, Director of Institutional Research and Planning at PVCC, and the results published in Developmental Reading and Writing at Piedmont Virginia Community College (PVCC Institutional Research Report No. 4-88, July 1988). This brief highlights one portion of the study, reading and writing assessment in general. The study also contained information on assessment scores and grades in selected content courses, developmental course completion and grades in selected content courses, and assessment scores and progress in developmental courses.

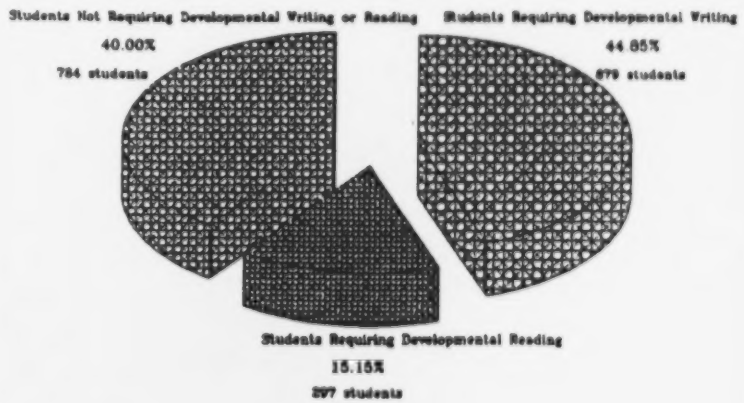

FIGURE 1: PVCC STUDENT ASSESSMENT INTO DEVELOPMENTAL WRITING AND READING (1984-1987)

As can be seen in Figure 1, 879 of the 1,960 students assessed scored below 24 (the cutoff score) on the English Qualifying Exam, and 297 scored below the 10th grade reading level.

The results are somewhat surprising. Because of the strong relationship between reading and writing, one might expect approximately the same percentage of students to require remedial reading as require remedial writing. However, only one-third as many students at PVCC scored below the cutoff score in reading assessment as scored below the cutoff

(Continued on reverse side)

score in writing assessment. Approximately 15% of the students required developmental reading, while approximately 45% required developmental writing.[1] One must assume that either area high schools prepare students better in reading than they do in writing, or the cutoff scores used by PVCC are inappropriate.

Several interesting questions arise from these figures.

(1) Why is the need for remediation in reading so low at PVCC? Is the cutoff score too low?

(2) In light of the fact that 60% of all students tested required either (or both) developmental reading or developmental writing, does the college have a larger number of academic high risk students than realized? If so, should the college offer these students more than just a developmental class?

(3) Should data on the number of students assessed and the results of this assessment become available on a semester basis? If so, what is the best way to maintain and report such data, and who should be responsible for doing this?

Clearly, further study is needed to answer such questions, and one of the first steps is to insure that accurate and reliable data are maintained. Evaluating the progress of developmental students should be conducted on a regular basis and results used in institutional and academic program review. A developmental tracking system has been implemented at PVCC, but the system must be constantly monitored and improved to provide the type of information needed. Because developmental education is fundamental to the mission of the college, monitoring and improving the developmental tracking system must be the responsibility of faculty in all areas of the college.

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[1]A large percentage of the 297 students requiring developmental reading also required developmental writing.

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DEVELOPMENTAL READING AND WRITING AT PIEDMONT VIRGINIA COMMUNITY COLLEGE

INTRODUCTION

One of the major functions of Piedmont Virginia Community College (PVCC) is to provide developmental courses for students. As noted in the college's mission statement, these courses are offered

> to prepare individuals for admission to an occupational-technical curriculum or to a university parallel-college transfer curriculum in the community college. These courses are designed to assist the individual with the development of the basic skills and knowledge necessary to succeed in community college programs.[1]

Although developmental courses in reading, writing, and mathematics have been offered since the college opened in 1972, information about developmental courses and students has been limited.[2] To remedy this, PVCC has begun implementation of a computerized "tracking" system of all students enrolled in devel-

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[1] Piedmont Virginia Community College Catalog: 1988-1990, p. 5.

[2] Four research studies relating to developmental studies have been published by the PVCC Office of Institutional Research and Planning. These are: (1) The Developmental Mathematics Student: A Profile, Fall 1982 by Margaret S. Willis and Robert A. Ross (Report No. 4-82, Fall 1982); (2) The Developmental Reading and Writing Student: A Snapshot by Frank J. Doherty (Report No. 9-84, May 1984); (3) Developmental Courses Taken by PVCC Transfer Students Entering the University of Virginia by Robert A. Ross (Report No. 2-85, March 1985); and (4) A Snapshot of Developmental Studies at Piedmont Virginia Community College: Fall Quarter 1987 by Ronald B. Head (Report No. 2-88, February 1988).

opmental courses. The college has also begun examination of the feasibility of integrating developmental courses into a unified developmental studies program.

The purpose of this study is to provide information about developmental reading and writing courses at PVCC. Such information should prove invaluable in further developing the "tracking" system and in investigating whether or not an integrated developmental studies program would benefit the college.

ASSESSMENT PROCEDURES

All curricular students, as well as all students planning to enroll in mathematics or English courses, are required to complete an assessment program prior to registration. Assessment includes measuring current levels of skill in reading, writing, and mathematics. To measure writing skills, the Northern Virginia English Qualifying Exam (Form A) is used, and to measure reading skills, the Nelson-Denny Reading Test (Form E), consisting of a vocabulary section and a reading comprehension section, is used. Students scoring below 24 on the English Qualifying Exam are advised to take ENGL 01 (Verbal Studies Laboratory) and students scoring below the 10th grade equivalent reading level, as measured by the combined score on the Nelson-Denny test, are

advised to take ENGL 08 (Reading Improvement).[3] The Catalog descriptions of these two courses are listed below:

> **ENGL 01 Verbal Studies Laboratory** (1-5 cr.) -- A developmental course in composition designed for students who need help in all areas of writing to bring their proficiency to the level necessary for entrance into their respective curricula. Emphasis on individual instruction. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours. (No academic credit is earned. Credit hours are for purposes of tuition calculation only. This course does not count toward graduation.
>
> **ENGL 08 Reading Improvement** (1-5 cr.) -- A developmental course using modern techniques, equipment, and materials to increase the student's comprehension, skill, and speed in reading. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours. (No academic credit is earned. Credit hours are for purposes of tuition calculation only. This course does not count toward graduation.[4]

Once enrolled in developmental classes, all students receive further testing, both formal and informal, to assure accurate placement. Writing samples are used in English courses to assess writing ability, and a variety of tests are used in reading courses to assess reading.

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[3]A combined score in both the vocabulary and comprehension sections of the Nelson-Denny Test of less than 64 is considered below the 10th grade reading level.

[4]Piedmont Virginia Community College Catalog: 1987-1988, pp. 93-94.

READING AND WRITING ASSESSMENT

In January 1984, PVCC began recording assessment results from the English Qualifying Exam and the Nelson-Denny test. Since that time, 1,960 students have been assessed. As can be seen in Figure 1, 879 of these students scored below 24 (the cutoff score) on the English Qualifying Exam, and 297 scored below the 10th grade reading level. Results for all PVCC students assessed between 1984 and 1987, as well as for students assessed during two sample academic years, 1985 and 1987, are listed in Table 1. The same patterns hold true for the two sample years as for the entire time period.

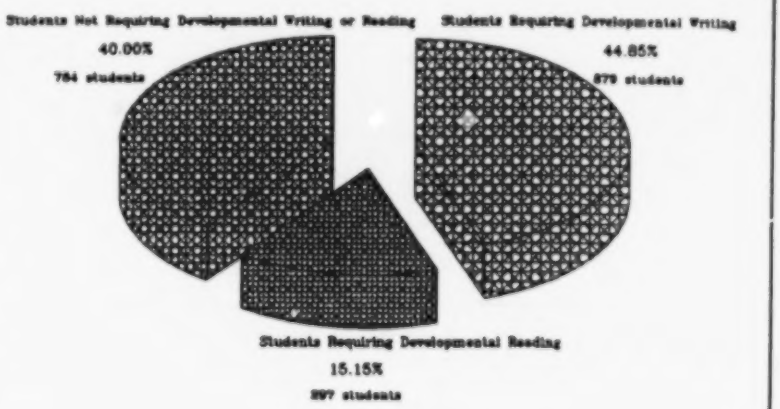

FIGURE 1: PVCC STUDENT ASSESSMENT INTO DEVELOPMENTAL WRITING AND READING (1984-1987)

The results are somewhat surprising. Because of the strong relationship between reading and writing, one might expect approximately the same percentage of students to require remedial reading as require remedial writing. However, only one-third as many students at PVCC scored below the cutoff score in reading

TABLE 1: PVCC STUDENT ASSESSMENT FOR DEVELOPMENTAL WRITING AND READING (1984-1987)

CATEGORY	TOTAL SAMPLE 1984-1987 No.	Pct.	SAMPLE YEAR 1985 No.	Pct.	SAMPLE YEAR 1987 No.	Pct.
Students Requiring Developmental Writing (ENG 01--Verbal Studies Laboratory)	879	44.85%	398	47.95%	239	44.92%
Students Requiring Developmental Reading (ENG 08--Reading Improvement)	297	15.15%	104	12.53%	82	15.41%
Students Not Requiring Developmental Writing Or Reading	784	40.00%	328	39.52%	211	39.66%
Total Students Assessed	1960	100.00%	830	100.00%	532	100.00%

assessment as scored below the cutoff score in writing assessment. Approximately 15% of the students required developmental reading, while approximately 45% required developmental writing.[5] One must assume that either area high schools prepare students better in reading than they do in writing, or the cutoff scores used by PVCC are inappropriate.

Several interesting questions arise from these figures.

(1) Why is the need for remediation in reading so low at PVCC? Is the cutoff score too low?

(2) In light of the fact that 60% of all students tested required either (or both) developmental reading or developmental writing, does the college have a larger number of academic high

[5]A large percentage of the 297 students requiring developmental reading also required developmental writing.

risk students than realized? If so, should the college offer these students more than just a developmental class?

(3) Should data on the number of students assessed and the results of this assessment become available on a semester basis? If so, what is the best way to maintain and report such data, and who should be responsible for doing this?

It is beyond the scope of this study to attempt to answer these questions, but they should be investigated. Evaluating the progress of developmental students should be conducted on a regular basis and results used in institutional and academic program review. Because developmental education is fundamental to the mission of the college, the college as a whole must be involved.

ASSESSMENT SCORES AND GRADES IN SELECTED CONTENT COURSES

While it is important to raise questions concerning assessment in general, it is also important to note the relationship, if any, between assessment scores and grades in specific content courses. Four content courses were selected for random review. Student test scores were recorded using the Nelson-Denny vocabulary and comprehension scores and the English Qualifying Exam score, and these scores were compared to grades in courses in the following subject areas: psychology, history, accounting, and economics. These four content areas were chosen, because each requires students to employ their reading and writing skills. Results are listed in Table 2.

TABLE 2: PVCC READING AND WRITING ASSESSMENT TEST SCORES BY GRADES IN SELECTED COURSES (FALL 1987)

COURSE	AVERAGE ASSESSMENT TEST SCORES BY COURSE GRADES							
	A Voc. Com. EQE	B Voc. Com. EQE	C Voc. Com. EQE	D Voc. Com. EQE	F Voc. Com. EQE	W Voc. Com. EQE	I Voc. Com. EQE	TOTAL Voc. Com. EQE
Psychology	No. = 3 82 60 40	No. = 2 40 29 21	No. = 7 53 50 29	No. = 4 53 47 28	No. = 6 50 50 25	No. = 0 -- -- --	No. = 0 -- -- --	No. = 22 55 49 28
History	No. = 16 69 58 34	No. = 4 50 48 27	No. = 2 41 41 26	No. = 1 69 58 27	No. = 1 34 36 12	No. = 1 33 22 20	No. = 1 41 46 32	No. = 26 60 52 30
Accounting	No. = 3 49 45 29	No. = 3 48 51 25	No. = 3 27 46 22	No. = 0 -- -- --	No. = 2 83 66 38	No. = 5 55 48 25	No. = 1 44 38 14	No. = 17 50 49 26
Economics	No. = 5 58 54 34	No. = 4 48 43 26	No. = 3 32 48 20	No. = 0 -- -- --	No. = 0 -- -- --	No. = 0 -- -- --	No. = 1 58 44 31	No. = 13 49 48 28
TOTAL	No. = 27 66 56 34	No. = 13 47 44 25	No. = 15 42 48 25	No. = 5 56 49 28	No. = 9 56 52 26	No. = 6 51 44 24	No. = 3 48 43 26	No. = 79 54 49 28

Voc. = Nelson-Denny vocabulary test. Com. = Nelson-Denny reading comprehension test. EQE = English Qualifying Exam.

Obviously, many factors other than assessment have an impact on grades. Even a cursory examination of the figures in Table 2 reveals that no relationship exists between assessment scores and academic grades. In fact, students receiving poor grades (D's and F's) scored higher on the assessment tests than those receiving B's and C's.

Statistically, the relationship between grades and assessment scores can be measured by determining correlation coefficients. Spearman rank order correlation coefficients for grade and assessment scores are as follows: (1) -0.30938 for grade and Nelson-Denny vocabulary score; (2) -0.28537 for grade and Nelson-

Denny comprehension score; and (3) -0.46328 for grade and English Qualifying Exam score.

What these correlation coefficients reveal is that there is a slight negative correlation between grades and assessment scores. The lower (or worse) the assessment score, the higher the grade. Obviously, assessment scores are meaningless as predictors of grades in content courses.

DEVELOPMENTAL COURSE COMPLETION AND GRADES IN SELECTED CONTENT COURSES

More important than the relationship between raw assessment scores and content course grades is the relationship between developmental course completion and content course grades. Does successful completion of a developmental reading or writing course result in higher grades in content courses requiring those reading or writing skills?

To determine what impact developmental courses have on other courses offered at the college, 25 students were selected at random from all students assessed in 1985. The only criteria used to select these students were a score below 24 on the English Qualifying Exam and a total raw score below 64 (the 10th grade reading level) on the Nelson-Denny Test.

Of the 25 students, 13 enrolled in developmental reading (ENGL 08) and 12 did not. Six of the 13 students enrolling in ENGL 08 successfully completed the course; 7 did not. Only 4 of the 12 students not enrolling in ENGL 08 enrolled in content

courses at PVCC. The remaining 8 students either did not enroll at the college or took only developmental English, math, or chemistry courses.

Actual grades received in content courses taken at PVCC by these students are listed in Table 3. The content courses taken by the students were ACCT 211, ACCT 221, ADJU 126, ADJU 299, BIOL 101, BUAD 100, BUAD 110, ELEC 171, ELEC 180, ENGL 101, ENGL 111, ENGL 112, DAPR 106, DAPR 258, GEN 100, GOVT 281, MATH 05, MATH 161, MATH 162, NASC 112, SECR 111, SECR 112, SECR 197, and WPDR 299.[6]

TABLE 3: GRADES RECEIVED IN CONTENT COURSES BY PVCC STUDENTS ADVISED TO ENROLL IN DEVELOPMENTAL READING (ENGL 08) -- 1985

GRADES IN CONTENT COURSES	Successfully Completed ENGL 08		Did not Successfully Complete ENGL 08		Did not enroll in ENGL 08		TOTAL	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
A	2	10.5%	0	0.0%	3	42.9%	5	14.3%
B	6	31.6%	0	0.0%	1	14.3%	7	20.0%
C	8	42.1%	1	11.1%	1	14.3%	10	28.6%
D	2	10.5%	1	11.1%	0	0.0%	3	8.6%
F	0	0.0%	2	22.2%	1	14.3%	3	8.6%
W	1	5.3%	5	55.6%	1	14.3%	7	20.0%
TOTAL	19	100.0%	9	100.0%	7	100.0%	35	100.0%

Because of the small sample size, caution should be exercised in analyzing these data. Still, the data suggest that

[6]For a complete description of each of these courses, see the PVCC Catalog--1987-1988, Op. cit.

within a group of students with below a 10th grade reading level, those who successfully complete developmental reading (ENGL 08) generally have higher grades in content courses and withdraw less frequently than those who do not enroll in ENGL 08 or who enroll in ENGL 08 but do not complete it.

Within the sample, students who took and successfully remediated reading deficiencies by completing ENGL 08 were more likely to persist in content courses than students who did not. Of the seven W's recorded, six were received by students who had not remediated reading deficiencies.

Student who successfully completed developmental reading courses also seemed to increase not only in academic persistence but in academic performance as well. For instance, in the random sample of 25 students, three took U. S. Government (GOVT 281). The one student who successfully completed ENGL 08 successfully completed the government course. The other two students did not enroll in ENGL 08; one failed GOVT 281 and the other withdrew. Similarly, three of the 25 students took Introduction to Business (BUAD 100). Two of these students had completed ENGL 08; one received a B in BUAD 100, the other a C. One student had not taken ENGL 08; that student received a D in BUAD 100. Still another example concerns students taking English composition (ENGL 101, 111, and 112). The students taking these courses who had successfully completed ENGL 08 made C's or better in these composition courses. Of those students who did not attempt ENGL

08, one withdrew and the other earned a C in ENGL 111 and an F in ENGL 112.

A similar analysis was conducted for 25 students assessed during 1985 who scored above the cutoff scores. These students scored between 24 and 26 on the English Qualifying Exam and between 64 and 70 on the Nelson-Denny Test. The persistence level of this second group was higher than that of the first group, but grades in content courses were comparable to those students in the first group who successfully completed ENGL 08 before attempting content courses.[7]

ASSESSMENT SCORES AND PROGRESS IN DEVELOPMENTAL COURSES

There are other ways of measuring the impact of developmental courses on student learning than comparing assessment scores or developmental course completion and content course grades. One of the simplest, if not best, ways of doing this is by examining scores on different versions of the same test. Since Form A of the English Qualifying Exam is given to students prior to enrolling in ENGL 01 and Form B is given at the end of ENGL 01, gains in writing improvement might be measured by comparing the difference between Form A scores and Form B scores.

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[7]One student in the second group took GOVT 281 and earned an A. Three students took BUAD 100; one received a B and the other two received C's. Sixteen English composition courses were attempted. Three A's were earned, one B, nine C's, one D, one F, and one W.

Substantially higher scores on the Form B test might indicate substantial improvement in writing skills.[8]

As can be seen in Figure 2, the mean, or average, pre-test score (Form A) of a Fall Quarter 1987 ENGL 01 class was 15.6. Nobody in the class scored above 24 (the cutoff score). The mean post-test score (Form B) for the same class was 23.2. Seventy-six percent of the class scored above the cutoff score of 24. Such an improvement in writing scores suggests that the ENGL 01 developmental course substantially helped the students improve their writing skills.

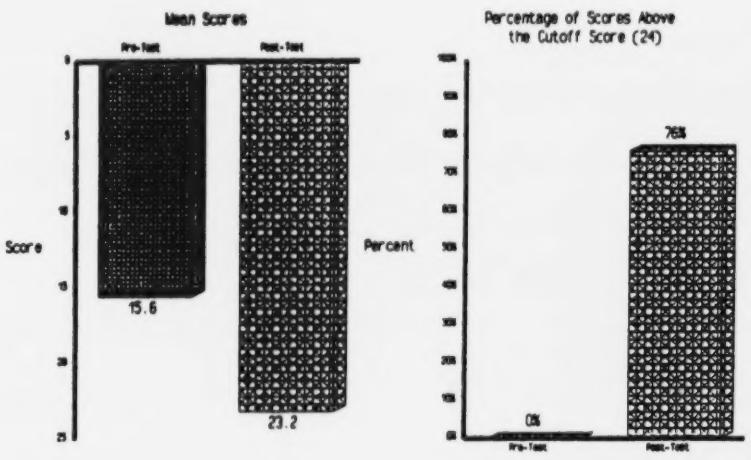

FIGURE 2: PVCC ENGLISH QUALIFYING EXAM PRE- AND POST-TEST RESULTS (FALL 1985)

Similar positive results have occurred in developmental reading courses. In one fall 1985 ENGL 08 class, all eight

[8]Caution should be exercised, however, in comparing the difference in scores. The authors of the English Qualifying Test claim that the test is not intended to measure "growth" in writing ability. Rather, there is a strong correlation between test scores and the ability to compose successful writing samples. The higher the score, the greater the probability that a student will be able to compose a strong essay.

students improved their comprehension scores on the Nelson-Denny Test, and seven of the eight improved their vocabulary scores. As can be seen in Table 4, the mean score on comprehension rose from 19.125 on the pre-test to 41.25 on the post-test; the mean score on vocabulary rose from 29.25 to 36.375. A correlated pairs t-test of these scores reveals that these gains in score cannot be attributed to chance alone. It would seem that the content of ENGL 08 does, indeed, help students improve their reading skills.

TABLE 4: PVCC DEVELOPMENTAL READING CLASS PRE- AND POST-TEST SCORES ON THE NELSON-DENNY EXAMINATION (FALL 1985)

	Comprehension Test		Vocabulary Test	
	Pre-Test	Post-Test	Pre-Test	Post-Test
	21	52	36	45
	21	38	33	47
	16	40	25	33
	20	46	32	42
	27	46	32	36
	16	42	28	27
	16	38	30	40
	16	28	18	21
Mean Score	19.1250	41.2500	29.2500	36.3750
Standard Deviation	3.9438	7.1664	5.6252	9.0069
Degrees of Freedom		7		7
T-Statistic		10.4532		4.2037
Level of Significance		0.0000		0.0040

CONCLUSIONS

Although there seems to be no relationship between assessment scores and grades in content courses, successful completion of developmental courses in reading and writing does seem to help students earn higher grades in content courses. It also helps

students improve their reading and writing abilities. As measured by score gains in different versions of the same test, students completing developmental reading and writing courses significantly improve their skills in these areas.

However, this study raised some interesting questions that could not be answered due to the study's limited scope. Why is the percentage of PVCC students requiring remediation in reading so much lower than that requiring remediation in writing? Are the assessment instruments used in reading and writing true measures of a student's skills in these areas? Are the cutoff scores accurate indicators of academic performance at PVCC?

Clearly, further study is needed to answer such questions, and one of the first steps is to insure that accurate and reliable data are maintained. Instituting a developmental tracking system has already occurred, but this system must be constantly monitored to insure that it is providing the type of information that can be used to improve developmental courses at PVCC.

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